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Restructuring Electricity Markets, Public Power, and Tax-Exempt Bonds: An Economic Analysis

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Dennis Zimmerman
Specialist in Public Finance
Economics Division

ABSTRACT

This report examines the economic effect of public power's continued use of tax-exempt bonds to finance its output facilities when the electricity industry is restructured to introduce competition in the generation and retailing of power and to require open access in the transmission of power. The report will be updated as legislative activity proceeds on S. 1483 and the Administration's proposal for restructuring the electricity industry.

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Summary

Tax-exempt bonds subsidize public power's cost of capital and enable it to lower price. The subsidy is economically beneficial (enables public power price to reflect the true cost of electric service) only if the private market fails to provide the correct amount of electricity. In general, the private market does provide the correct amount of electricity; in those cases when it does not, the tax-exempt bond subsidy is unlikely to correct the problem. Tax-exempt bond legislation over the last 30 years is consistent with this perspective; its focus has been to prohibit the spread of subsidized public power beyond its traditional service areas.

For public power entities entering a competitive electricity network, the existing tax rules would eliminate tax-exempt status for bonds that fund new capital facilities and also would require issuance of taxable debt to retire outstanding bonds for existing facilities. For new facilities, the reduced capital cost provided by tax-exempt bonds enters into public power's pricing decisions and enables it to charge lower prices. Continued use of tax-exempt bonds in a new competitive setting would expand the provision of subsidized power beyond traditional service areas and reduce the potential economic gains from industry restructuring. Thus, economic welfare is enhanced by the existing tax rules that prohibit use of tax-exempt bonds to finance new capital facilities to be used in the competitive network.

Economic analysis indicates that for capital facilities in place prior to restructuring, tax-exempt bond interest expense does not enter into the pricing decision, and grandfathering outstanding tax-exempt bonds would not provide a competitive advantage. Grandfathering would not adversely affect the economic gains from industry restructuring. Indeed, a failure to grandfather could adversely affect the economic gain from restructuring if the expense of taxable interest rates induced public power authorities to avoid the expense by maintaining their monopoly (not participating in open access plans), thereby reducing the scope of competition.

Some argue that transmission facilities should continue to be financed with tax-exempt bonds, like a public highway. High exclusion costs require public provision of local highways. Exclusion is not a problem for the transmission network. Continued subsidy via tax-exempt bonds would lower electricity prices and reduce federal revenue without providing offsetting benefits for federal taxpayers.

Treasury regulations issued in January 1998 and S. 1483 introduced by Senator Murkowski, would provide some relief but would not grandfather all outstanding tax-exempt bonds. The Administration's March 1998 electricity restructuring proposal would prohibit tax-exempt bonds for new facilities to be used in the competitive network, but would grandfather the outstanding bonds for existing facilities. It would also impose an excise tax to finance industry subsidy of related activities, such as low-income energy assistance, that is now financed from monopoly rents captured by the regulatory process and federal tax advantages provided to public power. The tax will reduce the economic gains from restructuring; alternative financing might be explored. This report will be updated as legislative action occurs.

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Restructuring Electricity Markets, Public Power, and Tax-Exempt Bonds: An Economic Analysis

I. Introduction

This report examines the economic effect of public power's continued use of tax-exempt bonds to finance its output facilities when the electricity industry is restructured to introduce competition in the generation and retailing of power and to require open access in the transmission of power.

The electricity industry has long been characterized by monopoly, that is, by firms with exclusive franchises to sell electricity to consumers in predetermined areas. Regulatory policies are being implemented at the present time to restructure the industry. These policies would replace a portion of this monopolistic structure with competition among utilities for the generation and sale of power, and would require that facilities to transmit power be made available to all generators of power at nondiscriminatory prices. The intention is to lower electricity prices. This move to restructure the industry has heightened policy concerns about several cost-reducing tax advantages that give utilities owned by state-local governments or their duly designated power authorities ("public power") the capacity to sell electricity at a price that does not reflect its real resource cost and is below the price charged by utilities owned by private investors (investor owned, or "IOUs"), whose price presumably more closely reflects real resource costs. Continuation of these subsidies could reduce the expected economic gains from restructuring.

One of these advantages, the exclusion from a federal taxpayer's gross income of the interest income earned on state-local debt, reduces public power's capital cost. Although the IOUs long objected to public power's use of these "tax-exempt bonds," the subsidy was not particularly economically threatening as long as the electricity market was characterized by monopoly. From the IOUs' perspective, competition makes the cost advantage conveyed by public power's use of tax-exempt bonds a more serious threat to their market share and financial success. Tax law as constituted through 1997 would require many public power entities that choose or are forced to engage in competition to forego use of tax-exempt debt for new output property (generation, transmission, and distribution facilities) and to refinance debt for existing output property at taxable interest rates. IOUs believe these pre-1998 tax rules should be enforced.

From public power's perspective, the use of tax-exempt bonds is an historical and legal right, one that enables it to provide electric power at a price that does not reflect real resource cost for good reason. Any violation of the existing tax-exempt bond rules that results from actions taken to comply with restructuring policies is not one

they have chosen but one being forced upon them. They believe tax-exempt bond law should be adjusted to allow public power continued use of these bonds.

This report begins by explaining how competition is expected to affect electricity prices and how the use of tax-exempt bonds can affect these prices. This is followed by analysis of whether the economic goals of electricity restructuring are better served by continuing or eliminating public power's use of tax-exempt bonds. This issue is considered separately for investment in new output facilities and existing output facilities. The possibility is then discussed that transmission facilities, a segment of the industry that will remain regulated under current restructuring schemes, should receive special consideration for continued tax-exempt bond financing. The report then discusses the potential loss of the current regulatory framework's subsidy of such related activities as research, rural electric rates, and the electricity bills of lower-income customers. The report ends with a description of the Treasury Department's January 21, 1998 temporary regulations for output facilities, Senator Murkowski's proposed treatment of tax-exempt bonds for output facilities in S. 1483, and the Administration's proposed treatment of tax-exempt bonds as presented in its electricity restructuring plan of March 25, 1998.

II. Deregulation of Generation and Retailing: Electricity Prices and Tax-Exempt Bonds

This section explains the relationship between deregulation (the introduction of competition into the generation and sale of electricity) and price; and how the use of tax-exempt bonds can affect the price charged by a utility.

A. Competition and Electricity Prices

The provision of electricity in the United States historically has been divided between investor-owned utilities (IOUs), public power, cooperatives, federal agencies ("federal power"), and independent power producers. In 1996, the 2,000+ public power utilities produced about 8.6 percent of the nation's utility-produced electricity. Because public power purchases electricity for resale from IOUs and federal power, it accounts for about 14 percent of final electricity sales.

Provision of electricity involves four distinct functions: generation — the creation of electricity; transmission — transportation of electricity over long distances; distribution — transportation of electricity from distribution centers to consumers; and retailing — the metering and billing of consumers. The industry historically has been organized into firms with exclusive franchises to sell electricity to consumers within a predetermined area. Many of these monopolies are vertically integrated, which means that they perform some combination of these four functions. Not all firms perform all functions. For example, some distribute and retail but buy generation and transmission services from other firms.

Monopolies are regulated by the public sector to counteract their tendency to sell too little output at higher than optimal prices. With electric utilities, this regulation tends to focus on setting prices to ensure that producers receive an "adequate" rate

of return on capital. In other words, prices are set to enable each utility to recover its capital costs, even if the production facilities built with the capital are inefficient and produce power that is more costly than could be obtained from alternative sources.

Some have argued that two of the four functions, generation and retailing, are not natural monopolies and can be transformed into competitive markets. In a competitive electricity market, prices would reflect the marginal cost of electricity generation. Generation plants for which this price is insufficient to pay for average costs would be replaced by plants whose costs were lower. Inefficient producers would be driven from the market and electricity prices would decline for many consumers.

The Public Utility Regulatory Policies Act of 1978 inadvertently laid the foundation for deregulation by opening the generation of electricity to non-utility entrants.¹ These new entrants along with the advent of new generating technology created a cost-effective alternative to traditional generation, leading the Federal Energy Regulatory Commission (FERC) to approve interstate wholesale sales based on market rates rather than on the seller's costs incurred to generate and transmit the power. The Energy Policy Act of 1992 formalized competition in the wholesale generation market.

Of course, the advantages of low-cost electricity generation can be lost if competitors with high-cost electricity who also own the transmission lines price transmission services in a noncompetitive fashion. Accordingly, FERC Orders 888 and 889, adopted in April 1996, provide for open access to the transmission grid at the wholesale level for all generators of electricity, which means transmission services must be priced in a nondiscriminatory manner. FERC is powerless, however, to mandate open access within a state — access that is necessary to realize the full benefits of retail competition. Various states have been implementing or studying retail competition, and are considering open access plans for transmission facilities.²

B. Electricity Prices and Tax-Exempt Bonds

Government occasionally interferes in the market system of prices by imposing taxes on the production of some goods and granting subsidies for the production of other goods. The subsidized producer can offer a lower price and has a competitive advantage over unsubsidized producers. Section 103 of the Internal Revenue Code (the Code) excludes from gross income and federal income taxation the interest income on bonds issued by public power. This lowers the interest rate on the bonds and reduces public power's cost of capital. Public power and its customers value the capital resources at the interest cost paid by public power. But the real value of the

¹ A more complete discussion of legislation relevant to electric deregulation appears in U.S. Library of Congress, Congressional Research Service, *Electric Utility Restructuring: Overview of Basic Policy Questions*, Report 97-154 ENR by Larry B. Parker, January 28, 1997, 16p.

² See various issues of *LEAP Letter* published by William A. Spratley & Associates, Inc. for information about state-local policies.

capital is measured by its best alternative use; this value is measured by the taxable interest rate.

In a world without competition, public power can use its lower borrowing cost to do any combination of three things.³ First, it can pass the subsidy through to its customers in the form of lower prices. Second, it can charge a price consistent with no subsidy and use the cost savings to provide related services such as low-income energy assistance or preferential rates for rural customers. Or it can pass the subsidy through to the political jurisdiction's general fund for tax relief and/or increased public services. Third, it can operate inefficiently with high variable costs (such things as labor, fuel, and transportation), providing neither lower prices nor tax relief/higher public services.

To the extent public power chooses the first of these options and lowers price, public power's customers either are being induced by the low price to consume too much electricity or they could have purchased that electricity from another producer who was paying the full cost of capital but managed to produce electricity more efficiently. In either case, the system may be wasteful. With the advent of competition in electricity generation, IOUs argue this subsidy will give public power a competitive advantage over IOUs and could inhibit the market adjustments necessary to produce electricity at the least cost to society.

III. Tax-Exempt Bonds for New Output Facilities?

In a competitive market, price is set equal to marginal cost, the cost of producing an additional unit of output. A firm making a decision about investing in new plant will not make the investment if its expected price and output are not sufficient to cover all costs inclusive of fixed costs. Since the tax-exempt bond subsidy reduces public power's fixed costs, it gives public power the potential to drive the market price down to a level that would impose losses on IOUs. Thus, according to economic analysis, IOUs are correct that continued public power use of tax-exempt bonds to finance new facilities in a competitive market could provide public power with a price advantage.

Despite these effects, continued public power use of tax-exempt bonds for new facilities could be a desirable public policy if this subsidy of public power satisfies some federal policy goal that provides benefits to federal taxpayers. Public power claims that its tax advantages flow from the right of communities to operate electric utilities as a public service, the very basis of our democratic and multi-level (federal)

³ A second cost advantage is provided by public power's exemption from paying federal income taxes. Some argue that these public power federal tax benefits only work to offset federal tax benefits received by IOUs. IOUs' tax benefits may reduce their effective tax rate on net income below their statutory rate. However, unless this tax treatment reduces the effective federal tax rate to zero, the cost advantage enjoyed by public power's exemption from federal income taxation is only reduced, not eliminated.

system of government, and that its lower rates relative to IOUs serve as a competitive yardstick that reflects the “true” costs of electric service.⁴

A. The Justification for the Tax Advantage

The alleged right of state-local governments to make their own fiscal decisions in our democratic multi-level system of government without interference from another level of government is a legal justification. It asserts that any taxation of interest income derived from state-local bonds is unconstitutional because the exemption is protected by the Tenth Amendment and the doctrine of intergovernmental tax immunity.

As the congressional effort begun in 1968 to restrict state-local governments' use of tax-exempt bonds for what Congress believed to be private purposes intensified in the 1980s, the issue of whether the basis for tax-exempt bonds is constitutional or statutory was tested in the courts. The issue was settled by a 1988 Supreme Court decision (*South Carolina v. Baker*, 485 U.S. 505 [1988]) that rejected this claim of constitutional protection, leaving Congress free to impose restrictions through the legislative process (described in detail in section III. B.).⁵

This leaves public power's other argument to justify its use of tax-exempt bonds for new output facilities — that its lower electric rates serve as a competitive yardstick which reflects the true cost of electric service. Section II.B. explained that use of tax-exempt bonds allows public power to charge a price that understates the real resource cost of electricity. This understatement of real resource cost can only represent what public power refers to as “true” cost if the private market for electricity fails to provide the proper amount of electricity at the proper price, and the tax-exempt bond subsidy enables public power to lower its price and correct this market failure.

According to economic theory, markets can fail in a variety of ways. If electricity's economic characteristics rendered it unsuitable for private production, public power provision would be necessary. This is not the case. Electricity possesses the characteristics required for private sector production: consumption can be denied to those unwilling to pay for it (unlike national defense); and one family's consumption of a unit of electricity prevents another family from consuming the same unit (again, unlike national defense). Public production is not necessary in order that

⁴ American Public Power Association, *Public Power and the Myth of the Electric Utility Industry's “Level Playing Field,”* undated. See p. 1-2.

⁵ Few issues are ever entirely resolved, and this one could arise again some time in the future. Some argue the Supreme Court's *South Carolina* decision is incorrect on the basis that it presumes the federal government has a property right to the interest income on tax-exempt bonds. If this federal property right does not exist, the exemption cannot be equated to a subsidy, and the economic argument justifying taxation of the interest income of state-local debt is incorrect. “By way of illustration, one certainly would not label the decision by a thief not to rob an owner a subsidy to the owner from the criminal.” Maxwell A. Miller and Mark A. Glick, “The Resurgence of Federalism: The Case for Tax-Exempt Bonds,” *Texas Review of Law & Politics*, v.1, Spring 1997, 25-59.

electricity be provided, as is obvious from the fact that more than 75 percent of electricity consumption is provided by IOUs.

But private markets also fail when they provide a good but the amount they provide is too large or too small. In fact, this is the economic rationale for state-local provision of many services. And it is the economic rationale (as opposed to the legal rationale discussed above) for the tax-exempt bond subsidy of public capital formation — that state-local public capital facilities and the public services provided by those capital facilities tend to be underprovided. The sheer number of state and local jurisdictions implies that any one jurisdiction's political boundaries likely fail to encompass all individuals and businesses who benefit from its public services. Thus, some of the collective consumption benefits from public services spill over the border of a taxing jurisdiction, as in the case of some educational services or environmental projects. Collective consumption benefits from providing such goods exceed the benefits to taxpayers in the providing jurisdiction. Because taxpayers tend to be unwilling to pay for services received by nonresidents, it may be desirable for a higher level of government (which does receive payments from the nonresident beneficiaries) to subsidize residents' consumption in order to induce state-local governments to provide the proper, that is, a larger, amount of facilities.

Thus, the economic case for a federal subsidy such as tax-exempt bonds focuses on the likelihood that the state-local sector does not adequately correct the private market failure, and this state-local “under provision” is attributable to its citizens' unwillingness to pay for benefits that would be provided to taxpayers living outside the jurisdiction. Does state-local provision of electricity satisfy this criterion? Does the tax-exempt bond subsidy enable public power to account for the social benefits and social costs of electricity?

Three circumstances might cause the amount of electricity provided by public power to be nonoptimal and impose external or spillover effects on nonresident federal taxpayers. First, the electricity production process might generate environmental costs that flow down river or are carried upwind/downwind to nonresidents, and consequently are not taken into account when making decisions about output and price. To the extent these costs exist, the appropriate federal response would be to impose a tax (thereby internalizing the pollution costs) or to impose regulations, not to provide a subsidy to public power.

Second, reliance on a sole provider for a geographic area (as a cost-minimizing strategy) might impose higher electricity costs and prices on nonresidents by denying the utilities serving these nonresidents access to markets necessary to achieve an efficient scale of operation. A subsidy of public power does not correct this problem. In fact, the current efforts of the federal government and some states to adjust the industry's regulatory structure to promote competition are designed to correct this problem, and the tax-exempt bond subsidy of public power is potentially an impediment to these efforts.

Finally, resort to public power may have been necessary because private producers did not find it profitable to provide the universal service that society deems to be fair at a cost that is affordable to geographically isolated consumers. And federal taxpayers may value the redistributive aspects of such service such that they

are willing to pay for it. At the end of the 20th century, universal service is a reality.⁶ But economists argue that using tax-exempt bonds to achieve such service is inefficient and inequitable. It subsidizes consumers within public power service areas that have no universal service problem. In areas with a problem, it subsidizes all consumers rather than the relatively few who need it. And it provides no subsidy for needy consumers in areas served by IOUs.

In summary, the exclusion from federal income taxation of interest income on tax-exempt bonds for public power is a subsidy that obscures rather than reveals the true cost of electricity and redistributes income to public power customers from the 75 percent of the country that purchases its electric power through the private sector. Such subsidies might be expected to serve an efficiency goal of correcting for market failure caused by spillover effects, but these do not appear to be great for electricity provision, and those that do exist can be addressed with appropriate government regulation or taxation (not subsidy) of private industry rather than government production. To the extent the subsidy is used to finance lower-cost service to those in need, such assistance could probably be provided more efficiently (at lower federal budget cost).

Of course, the subjective judgment of taxpayers in a state or a local region still may be that public production of electricity is justified, and if they believe such provision should be subsidized they are free to provide such subsidies even in the absence of a federal subsidy.⁷ In addition to the benefits such a subsidy would provide to state-local taxpayers due to a perceived correction of market failure, it would redistribute income to state-local citizens according to each person's electricity consumption and from state-local citizens according to each person's state-local tax burden.

B. Bond Legislation Affecting Public Power

The previous section analyzed the economics of continued use of tax-exempt bonds to finance new output facilities. Would denying such bond use represent a break with congressional tax-exempt bond policy?

Congress has engaged in a thirty-year effort to deny use of the federal subsidy provided by tax-exempt bonds for goods and services that do not satisfy its conception of public services.⁸ And some of these efforts have been directed specifically at public power.

⁶This may be attributable in part to direct federal programs such as the Tennessee Valley Authority and in part to the regulatory process subsidizing some service with monopoly rents. The reduction in these rents that is a byproduct of industry restructuring could put such subsidies at risk. This is discussed in section VI of this report.

⁷ In fact, public power does not pay state or local income taxes. In some cases, it does make some smaller payments in lieu of state-local income taxes.

⁸ For more detail concerning the legislation discussed in this section, see U.S. Library of Congress, Congressional Research Service, Tax-exempt Bond Legislation, 1968-1996: An Economic Perspective, Report 96-698 E by Dennis Zimmerman, August 13, 1996, 41 p.

Having federal taxpayers pay part of the interest costs on state-local borrowing encourages state-local governments to invest in capital facilities to provide public services. But it also creates a problem: it encourages state-local officials to use the low-cost capital to provide services to their constituents at a reduced price, services that can be and are provided by the private sector at a higher price that reflects the private sector's higher borrowing cost (the full value of the resources used). The public sector can provide these services in two ways. First, it can directly produce the good at a lower price. Second, it can make loans to private businesses and even private individuals to produce the good at a lower price. The potential for the state-local sector to expand the scope of its production activities or to assume the role of a commercial banker is obvious.

Congress first attempted in 1968 to control the commercial banker role of state-local officials. It declared state-local bonds to be taxable if: (1) 25 percent or more of the bond proceeds are to be used by a nongovernmental person (the "use" test); and (2) 25 percent or more of the debt service on the bonds is to be secured (paid) by property used directly or indirectly in a trade or business (the "security" test). These percentages were changed to 10 percent in the Tax Reform Act of 1986, and bonds satisfying the tests were called taxable private-activity bonds.⁹

The focus of these rules was to prevent tax-exempt bond proceeds from being converted into loans for private investments in manufacturing and commercial physical capital. Some activities were allowed continued use of tax-exempt bonds even if they satisfied the private-activity bond rules. One of these activities is "local furnishing" of electricity. An IOU's (or independent power producer's) electricity sales must be confined to two contiguous counties or a city and a contiguous county to qualify as a local furnisher eligible to use tax-exempt private-activity bonds. However, Congress limited the use of these bonds by including them in the state private-activity bond volume cap that is equal to the greater of \$50 per state resident or \$150 million each year. Inclusion in the cap means that the bonds issued for local furnishers must compete with most other exempt private activities within a state for a share of the state's annual allocation of tax-exempt private-activity bonds.¹⁰

But many state-local governments historically have subsidized electricity for their citizens through publicly owned utilities, not by conveying the subsidy to IOUs or independent power producers. These publicly owned facilities also have the potential for allowing private businesses to garner the benefits of the tax exemption for private use. Thus, rules were developed that required public power contracts for the sale of electricity to private businesses to be executed at non-preferential rates and with terms that did not otherwise transfer additional portions of the tax benefits to a private

⁹ The most comprehensive discussion of legislative changes affecting public power appears in Joint Committee on Taxation, *Federal Income Tax Issues Arising in Connection with Proposals to Restructure the Electric Power Industry*, (JCS-20-97), October 17, 1997, 9-20.

¹⁰ Additional restrictions on local furnishers were enacted in 1996, discussed below.

business. Those contracts that did not meet these requirements would be counted against the 10 percent rules.¹¹

This is a confusing situation. As discussed in the preceding section, electricity has all the characteristics of a private good. About 75 percent of all electricity consumption in the United States is provided by the private, not the public, sector. By its very nature, public power converts the federal tax-exempt bond subsidy to private use. But the only portion of the subsidy considered by the private-activity bond tests to be private use is that portion associated with contracts offered at preferential rates not available to the general public.¹²

Not counting as private use those contracts issued by public power at non-preferential rates to large users located beyond its traditional service area conceivably could have led to the expansion of public power's market share at the expense of IOUs. This has not happened because the binding constraint here is the private market, not the tax law. Before investors will purchase the bonds used to build public power output facilities, they must be reasonably certain the facilities will generate revenue sufficient to pay the interest and principal on the bonds. Substantial expansion of capacity directed to large users outside public power's traditional service area cannot provide such assurances. The buyers' demand for electricity is subject to fluctuation with the business cycle, and, being beyond public power's traditional service area, the buyers have an alternative supplier. In addition, the public power entities are dependent upon other utilities for transmission and distribution services beyond their traditional service areas, and these other utilities might charge rates that prevent it from passing much of the tax benefit through in lower prices.

Nonetheless, congressional concern with the spread of power subsidized with tax-exempt bonds caused it in the 1986 Tax Reform Act to impose more severe restrictions on private use of bond proceeds for output property than it did for all other eligible private activities. Any bond issue for which 5 percent or more of the proceeds are used to finance output facilities is limited to a maximum \$15 million of private use. Thus, any bond issue for which 10 percent private use (the standard for all other private activities) would exceed \$15 million in effect is limited to less than

¹¹ A discussion of these contract rules is provided in *Temporary and Proposed Private Activity Bond Regulations: Public Utility Output Facilities*, Fulbright & Jaworski L.L.P., January 1998.

¹² This internal inconsistency is inherent in the form of the subsidy, one that is provided to any service state-local governments choose to provide. In the absence of constitutional protection for tax-exempt bonds, Congress could choose to eliminate such inconsistencies and many difficult tax-exempt bond policy issues by taxing the interest income on state-local debt and providing an explicit subsidy to those state-local services it believes provide significant economic benefits to federal taxpayers. Such a "taxable bond option" has been considered by previous Congresses. The Taxpayer Relief Act of 1997 instituted Zone Academy Bonds, a variant of the taxable bond option structured to provide a taxable federal tax credit rather than tax-exempt interest income. These bonds, which effectively pay all of the state-local government's interest cost, are restricted to certain capital facilities for education. See U.S. Library of Congress, Congressional Research Service, *Tax-Exempt Bond Provisions of the Taxpayer Relief Act of 1997*, Report 97-828 E by Dennis Zimmerman, September 10, 1997, 5p.

10 percent private use if the private use is electricity generation. In addition, the \$15 million limit applies to all outstanding bonds for the project, not to each individual bond issue as is true for all other private activities. Given that electric facilities often cost hundreds of millions of dollars, for most projects the \$15 million limitation imposes a private use share much smaller than 10 percent.

Congress deemed this special treatment necessary because existing law permitted IOUs temporary use of more than 25 percent of multiple billion dollar public power bond issues. These bonds would be issued to finance public power facilities whose output for public power customers would not be needed until far in the future. The determination of private use of electricity output in a given year from these bond-financed facilities was calculated as a percentage of the expected electricity production over the facilities' life, thus allowing sale of excess capacity to IOUs that far exceed the allowable 25 percent that prevailed from 1969 through 1986.

Congressional desire to limit the spread of electricity subsidized by tax-exempt bonds was further demonstrated by two additional actions that followed the 1986 act. First, the Omnibus Budget Reconciliation Act of 1987 adopted a provision that treats as private-activity bonds subject to the volume cap any tax-exempt bond issue for which 5 percent or more of the proceeds are used to acquire output property owned by IOUs.¹³ The only exceptions are for public power to acquire property to provide service to an area currently served or an annexed area contiguous to and not more than 10 percent of the area currently being served. Given the size of the volume cap and the size of most power projects, this provision virtually precludes expansion of public power's market share through this means.

Second, the Omnibus Budget Reconciliation Act of 1996 further restricted IOU or independent power producer use of private-activity bonds for "local furnishing" (discussed earlier in this section) to service territories that were using the bonds prior to January 1, 1997. In effect, those providers using the bonds at that time were grandfathered; additional "local furnishers" were prohibited.

In summary, allowing tax-exempt bonds to be used for new output facilities after deregulation of generation and retailing has been implemented would give public power a competitive advantage over IOUs. It would increase the share of the market in which consumers are paying a price that does not reflect power's real resource cost. This would be desirable only if the electric power market is characterized by a market failure that is corrected by public power's use of tax-exempt bonds. This does not appear to be the case. Furthermore, three decades of tax legislation seems to have been directed to controlling the spread of the tax-exempt bond subsidy to areas not served historically by public power. Proposals to deny use of these bonds for new public power output facilities that are used to participate in the competitive market are intended to prevent differential treatment of IOUs, minimize distortions in the electricity market, and continue the thrust of long-term federal tax policy in this area.

¹³This provision is discussed in U.S. Library of Congress. Congressional Research Service, Tax-exempt Bond Financed Takeover of Investor-owned Utilities: An Issue of Privatization and Competition, Report 88-174 E by Dennis Zimmerman, March 2, 1988, 8p.

IV. Tax-Exempt Bonds for Existing Output Facilities?

Will the tax-exempt bonds that public power used to finance existing output property allow it to charge a lower price and gain an unfair advantage when competing to sell power from those facilities? Money that was borrowed to construct existing output facilities represents fixed costs. The interest cost on its debt is part of these fixed costs. Public power must pay these costs, unless it goes bankrupt, whether or not it maintains its production and customer base.

A public power utility will make pricing decisions to compete against other utilities on the basis of its variable cost, items whose use varies with production such as labor, fuel, and transportation. It will lower its price to retain or attract customers provided the marginal revenue from that decision equals or exceeds its variable cost. If its variable cost is high relative to its competitors' variable cost, those competitors will drive price down to a level where the public power authority cannot compete and it will lose market share. If its variable cost is low relative to its competitors' variable cost, it will drive price down to a level where its competitors cannot compete and it will increase market share. Note that the lower interest cost of public power relative to IOUs does not affect this pricing decision on production from existing output facilities and will not provide an unfair advantage to public power.¹⁴

If a decision to compete or a mandate to share its facilities with private entities causes public power's tax-exempt bonds to violate the private-activity bond rules, these bonds become retroactively taxable.¹⁵ The way such a situation is likely to be handled is either for the utility to issue taxable debt and use the bond proceeds to retire the tax-exempt debt or to pay the Internal Revenue Service the lost federal tax revenue that would result if the bonds were to remain tax-exempt. Such increased costs shift up the firm's fixed costs and decrease its net income or increase its net loss, but they do not affect its variable cost or its pricing decision. In other words, forcing public power to refinance its existing tax-exempt debt as taxable debt will not change the competitive relationship between public power and IOUs nor will it improve the ability of deregulation to provide economic benefits to consumers.

Refinancing at taxable rates could, however, have some negative consequences. The federal government is responsible for regulating interstate commerce in electricity, but the regulatory task for intrastate commerce is left to the states. The federal government cannot force the states to force public power to open access to its transmission and distribution facilities for intrastate retail competition. Public

¹⁴The same cannot be said for two other federal cost advantages enjoyed by public power: (1) exemption of its income from federal income tax; and (2) preferences for the purchase of low-cost federal power. Both of these advantages do enter into variable cost and will affect pricing decisions on output from existing facilities. For a discussion of federal power preferences, see: U.S. Library of Congress. Congressional Research Service, *Power Marketing Administrations: A Time for Change?*, Report 95-356 ENR by Larry Parker, March 7, 1995, 22p.

¹⁵ The Joint Committee on Taxation has provided a variety of specific examples to illustrate how such post-issuance violations might occur. Joint Committee on Taxation (1997), 18-20.

power firms that see few benefits from competition may be reluctant to participate in open access plans because the decision might cause their tax-exempt bonds to become taxable and raise their interest costs. This would reduce the geographic reach of the network, the amount of competition, and the potential benefits for other consumers.

Thus, proposals to provide public power relief from post-restructuring violations of the private-activity bond rules for debt outstanding at the time restructuring occurs make economic sense. Providing relief would not adversely affect IOUs' ability to compete for customers and the potential economic benefits of deregulation. A decision to enforce the private-activity bond rules for existing output facilities has two major consequences, one a clearly undesirable negative effect on economic efficiency and the other a distributional effect whose desirability depends upon subjective judgments. First, enforcing the existing rules might induce some public power authorities to refuse to participate in open access plans in order to retain their tax-exempt bond privilege, an action that would limit the scope of competition and reduce the economic gains from restructuring. Second, for those public power authorities that do choose to participate, it would shift the incidence of the cost of the subsidy from all federal taxpayers to public power's electricity consumers.

V. Are Transmission Facilities a Special Case?

Because the transportation of electricity over long distances is most economically performed by one provider, transmission facilities do not appear to be a good candidate for competition. The potential for an unregulated owner of such facilities to provide favorable rates for its own power has caused FERC in order 888 and some states to propose that all transmission facilities be placed in the hands of an independent system operator (ISO). This operator would be responsible for maintaining a system open to all generators of electricity for the transmission of their power at nondiscriminatory rates, thereby encouraging maximum retail competition.

Some have argued that an ISO, whether organized as a private, nonprofit, or public firm, will in effect be a public utility providing services to the general public, much as a public highway. As such, it is argued that new transmission facilities are a special case and should be financed with tax-exempt bonds, even though privately owned facilities are not currently eligible for tax-exempt financing.¹⁶

In fact, the economic characteristics of the transmission network are not analogous to those of a public highway. Why are highways most often provided by the public sector? First, if they are not congested, an additional user can be accommodated at virtually zero marginal cost, which implies a price incompatible with private provision. Second, even if the highway is congested, it is very costly to exclude those who do not pay for the service, particularly on local highway networks. And as a practical matter, it is inexpensive to price the service through a user charge

¹⁶Of course, were the ISO organized as a private firm, it would violate existing tax-exempt bond law and could not use tax-exempt bonds. The fact that it could be organized as a private firm essentially says that these services possess the characteristics of a private good and a public subsidy is only justified if the "correct" amount is not provided.

such as the gasoline tax. In effect, this brief discussion indicates private highway provision in many circumstances might result in too little and unnecessarily costly service being provided.

Transmission services are very different. They may or may not be subject to congestion. But it is not expensive to exclude those who don't pay. Such services can easily be provided by the private sector, as is evidenced by the fact that these services currently are overwhelmingly provided by the private sector.

Any failure of privately owned transmission facilities to provide the correct amount of services is due to it being a decreasing cost industry conducive to monopoly provision. This problem can be corrected by regulation. Allowing continued use of tax-exempt bonds would mean the customer would be paying less than the real resource cost of transmission services, even though this reduced cost is not correcting a market failure.

Providing a tax-exempt bond subsidy would give the ISO the potential for underpricing transmission services and encouraging too much electricity consumption. Or it might lead to inefficient management that incurs unnecessarily high variable costs. Or it might be used to continue the funding of the numerous subsidies of related activities that are financed from the existing regulatory system's monopoly rents (discussed in the next section). However the ISO might use a tax-exempt bond subsidy, federal taxpayers must consider carefully whether they receive benefits commensurate with the federal tax dollars they forego because of the bond subsidy.

VI. Subsidy of Related Activities

One attribute of a monopolistic market is that the lack of competition generates "rents" for the monopolist. Left unregulated, the rent would appear as a risk-adjusted rate of return on investment for the monopolist that exceeds a normal or competitive rate of return. One of the objectives of regulating a monopoly is to eliminate or reduce this excess. A feature of the existing regulatory structure is that some of the excess return is captured by the regulators and used to subsidize other activities related in some way to the electricity market. The tax-exempt bond subsidy enjoyed by public power provides the same opportunities; rather than using it to provide lower electricity prices, it can be used to subsidize other activities. Industry restructuring and loss of tax-exempt bonds raise the possibility that these subsidies might be eliminated or reduced.

Numerous examples of these subsidized activities exist. For example, were regulators or power authorities to implement marginal cost pricing, a utility's rural customers might pay even higher prices compared to urban customers than currently is the case. This is attributable to the greater marginal cost for extending service to a rural area characterized by lower customer density and greater transmission distance. Thus, one of the "benefits" of average cost pricing often is to require urban customers of a utility to pay more-than-competitive prices to finance less-than-competitive prices for rural customers. Some have expressed concern that a consequence of deregulating generation and retailing of electricity and eliminating the

tax-exempt bond subsidy is that it will eliminate subsidy of this related activity and result in higher prices for rural areas.

Other examples of subsidies financed with the monopoly rents and/or tax preferences of the existing industry include such activities as low-income energy assistance, provision of advice about and sometimes direct subsidy of customer energy conservation activities, funding of research, and encouragement of alternative energy sources. Public power use of its tax-exempt bond subsidy might be extended to include virtually any service in the public sector budget or general tax reduction.

Continued financing of such activities in a restructured market will inhibit full implementation of economically efficient marginal cost pricing and will reduce the economic gains from restructuring. If the increased supply of these subsidized activities is sufficiently valuable to merit continuation, the subsidy need not be provided by electricity consumers through higher-than-competitive prices.

As a general rule, all of these activities can be financed by collecting income or other generally applicable taxes and providing direct subsidies, or by foregoing the collection of taxes through tax exemptions, deductions, and credits. Use of such general taxes to continue these activities would spread any distortion of resource allocation and loss of economic efficiency across all markets, not just the electricity market. And the cost of the subsidy would be financed by the entire taxpaying population, not just by those electricity consumers paying more-than-competitive prices.

When deregulating the telecommunications industry, Congress opted to continue subsidizing related activities by adjusting telecommunications rates rather than by switching to the general budget. The 1996 Telecommunications Act (P.L. 104-104) established the Universal Service Fund financed with a tax on billed revenue of telecommunications carriers (now about 4 percent, but varies with universal service needs). "Universal service needs" subsidized include: rates for telephone companies (primarily rural) with high costs; telecommunications services for schools, libraries, and rural health-care providers; assistance to low-income customers; and telecommunications devices for the deaf. A similar approach could be followed for electricity if maintenance of subsidy for related activities is desired. Most electricity restructuring bills do provide for continued funding of such subsidies.¹⁷

VII. Legislation and Regulations

The Internal Revenue Code and the associated Final Regulations regarding private-activity bonds as adopted in final form on January 16, 1997 (originally proposed in 1994) established a system to handle instances of post-issuance violation of tax-exempt bond rules. In general, as applied to utilities, output is counted against the 10 percent rules if the contract between the utility and the buyer transfers to a

¹⁷U.S. Library of Congress, Congressional Research Service, *Electricity Restructuring: Comparison of S. 1401, H.R. 655, H.R. 1230, S. 722, and H.R. 1960*, Report 97-504 ENR by Larry Parker, November 17, 1997, 11p.

nongovernmental person the benefits of owning the facility and the burdens of paying debt service on the facility. Whether or not a contract makes such a transfer depends to a great extent upon the degree of certainty with which payments are made under the contract.

On January 21, 1998, the Internal Revenue Service issued temporary regulations dealing specifically with output facilities that adjust the rules above for determining private business use.¹⁸ Generally under the 1994 regulations, contracts that required payment were counted as private use, whether or not the customer used all the power contracted for, but contracts that required payment only for power used were not. The temporary regulations include many of the latter types of contracts as private use. In addition, contracts that are pledged as security for an issue constitute private use even if the payment is not substantially certain.

The temporary regulations expand the private-use exception granted for swapping and pooling arrangements to include swapping entered into to increase system reliability. The exception for short-term sales (spot sales) to accommodate excess capacity is also expanded. And the sale of excess power “stranded” due to deregulation (in other words, the loss of customers to other utilities) for a contract period not to exceed three years does not count as private use provided: no additional tax-exempt bonds for capacity expansion are issued during the contract period; the public power authority offers nondiscriminatory prices on its transmission facilities; all of the output being sold in the contract is stranded due to participation in an open access system; and stranded costs recovered are used to redeem the tax-exempt bonds.

The temporary regulations generally also provide an exception for outstanding bonds for the use of transmission facilities in response to or in anticipation of a FERC or state order to participate in an open access plan. The exception does not apply to the sale, exchange, or other disposition of transmission facilities to a nongovernmental person.

S. 1483 introduced by Senator Murkowski on November 8, 1997, would not count several types of public power transactions as private use. These include:

1. Sales to another public power utility that is not participating in an open access plan and will sell the output for general public use.
2. Output exchanges for a utility that on an annual basis is a net recipient of exchange power, for which the exchange agreement is not an output-type contract and whose purpose is to satisfy peak load demand or temporary outage problems.
3. Sales of excess output for a single contract not to exceed 30 days that are not output contracts with specific purchasers.

¹⁸TD 8757, IRS Final Temporary Rules Guiding State, Local Governments That Issue Bonds for Output Facilities, January 21, 1998.

4. Sales of excess output that do not exceed \$1 million.

The bill would also allow tax-exempt bonds for facilities used in open access plans to remain tax exempt if the utility agrees to:

1. Issue no tax-exempt bonds for any output facilities after the date of open access participation.
2. Outstanding tax-exempt bonds issued before December 1, 1997 are redeemed by the later of the earliest date they may be redeemed (as determined by the bond covenant) or the date of the election to participate. For bonds issued after November 30, 1997, and before the date of participation, the bonds must be redeemed by the earlier of the earliest date they may be redeemed or 10 years after S. 1483 is enacted.

The Administration's March 25, 1998 proposal for restructuring the electricity industry appears to take a different, less circumstance or contract-specific, tack. It would:

... provide that (1) private use limitations are inapplicable to outstanding bonds for publicly-owned generation, transmission or distribution facilities if used in connection with retail competition or open access transmission, and (2) tax-exempt financing is unavailable for new generation or transmission facilities. Tax-exempt financing would continue to be available for distribution facilities subject to current law private use limitations.¹⁹

The continuation of tax-exempt bonds for distribution facilities requires some explanation. This decision probably has more to do with the practical realities of local public services than with economic principles discussed earlier. In principle, the discussion in section V about transmission facilities applies for distribution facilities. But transmission facilities usually are placed on property reserved solely for transmission of electricity. Distribution facilities often share property being used for other public utilities such as sewer and water. Denying tax-exempt bonds would raise difficult administrative questions about what share of the investment in this shared property is devoted to electricity. One might think of the incremental costs for distribution facilities as minimal.

The Administration proposal would also create a \$3 billion per year Public Benefit Fund financed with a generation or transmission interconnection fee not to exceed 1/10 of one cent per kilowatt hour. The fund would be used to provide matching grants to states for activities now subsidized through the regulatory framework: low-income assistance; energy efficiency programs; consumer education; and the development and demonstration of emerging technologies. This charge is in effect a per unit tax. It will stimulate some decisions that will reduce the economic gain to be achieved with the lower prices from deregulation. These costs are expected to be compensated by the social benefits produced by the subsidized

¹⁹U.S. Department of Energy, Comprehensive Electricity Competition Plan, March 25, 1998.

activities. The fund will, however, be financed as a function of each taxpayer's electricity consumption rather than his contribution to the general fund.